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MSTA

Montana Science Teachers Association

Dedicated to Quality Science Education

Newsletter

Volume 8
Number 2

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SPACE, SCIENCE, & TECHNOLOGY

Below is information on the *Space Science Student Involvement Program* administered by NSTA and NASA. This program has been running for ten years. It was highlighted on a two-part episode of ABC's series, *Head of the Class* on November 1 and 8. Experiments from the competition have flown on past shuttle missions. Most recently there was an experiment on the *Atlantis* mission in October and one scheduled for launch in December.

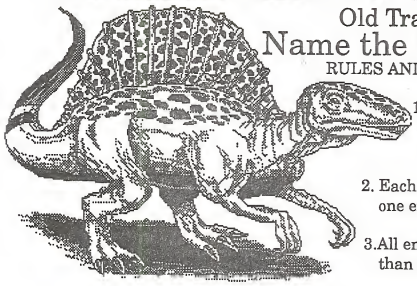
SPACE SCIENCE STUDENT INVOLVEMENT PROGRAM

Administered by NASA and the National Science Teachers Association, SSIP is an annual program that involves students in creating experiments, art, and newspaper articles in areas of outstanding student work through various prizes, it is basically designed around classroom activities and participation in the competition is voluntary.

Students compete in five categories; competitions are available for grades 6-8 and 9-12:

- Space Station Proposal
- Zero-Gravity Research Facility Proposal
- Wind Tunnel Proposal
- School Newspaper Competition
- Mars Settlement Illustration

For entry materials please write:
NSTA-SST
5110 Roanoke Place
Suite 101
College Park, MD 20740



Old Trail Museum, Inc.
Name the Dinosaur Contest
RULES AND REGULATIONS

1. Contest is for students enrolled in grades one through six throughout the State of Montana.
2. Each student will be allowed to submit one entry.
3. All entries must be postmarked no later than March 15, 1990.
4. In case of multiple entries of the winning name, the first place winner will be decided by a blind drawing.

CONTEST PRIZE LIST

Winning student will recieve a $100.00 savings bond.

Winning student's school will receive $1,000.00 to be used for science books and/or equipment

Winning student and his or her immediate family will receive transportation expences from their home to Choteau for the day of unveilng.

Optional prize: Winning student and classmates and teacher may have a free tour of the museum's dinosaur grounds near Choteau. Transportation not included.

CONTEST INFORMATION

Wes Boyden and his wife Peggy of Saugus, Ca., are currently constructing a life size model of an *Albertosuarus* which will be donated and delivered to the museum in the spring of 1990. The museum would like the model to have it's own personal name.

The *Albertosaurus* is one of the many dinosaurs which were alive in this area about 70 million years ago. It was one of the large carnivores and the research team for the museum has found several fossilized remnants of this animal which are on display in the museum collection.

It is suggested that the students be allowed to do some of their own research concerning the *Albertosaurus* as it may tend to stimulate their natural curiosity and improve reading/understanding skills.

Entries are to be sent to : Name the Dinosaur Contest
P.O. Box 919
Choteau, Mt. 59422
Entries may be sent individually or in bulk for an entire class or school.

Status of the **Save The Rainforest** program:

As of early September at least one biology teacher in nearly every school in the USA has been contacted. We estimate that 3-4,000 schools will receive the fall campaign materials and that a significant number of them will participate in the program. A considerable number of college ecology clubs are joining us also. On the other end of the spectrum are the elementary schools. If at all possible try to include them in your activities. Share your resource list with them and encourage them to undertake some kind of educational and/or fund raising project.

Spring campaign, final report:

Schools sent in a total of $5,104.47 this spring. Another $2,500 has been raised through speaking engagements, postage contributions and corporate donations. The school donations have been distributed as follows: $1,250 went to The Rainforest Action Network to support the Penan people in their fight against Japanese loggers to save their rainforest home in Sarawak, Malaysia. $1,250 went through the Nature Conservancy to help protect Cerro Cora, a virgin rainforest in Paraguay. $1,500 went to The Monteverde Conservation League in Costa Rica for land purchase at $50 per acre. $1,000 went to the World Wildlife Fund for the Debt for nature swap in Ecuador (The Costa Rica Account was inactive when we made our donation). The debt for nature exchange rate was $8 of debt relieved for each dollar contributed. Thus we have provided Ecuadoran conservation groups with $8,000 dollars for conservation work while helping their government to reduce its foriegn debt.

11,474 signatures were gathered and sent to the World Bank. The Bank replied to our petition by saying that it has undergone a major reorganization and has given a very high priorty to the environment. It concluded by saying, quote, *Please convey this to the students and educators concerned and assure them that the World Bank shares their concern and will continue to do all it can to help protect the environment.* Hopefully the Bank is sincere, however, they still merit our scrutiny, and since they seem to be concerned about their image we will be able to apply more pressure to them in the future if needed. The top contributing school for signatures was Maumee High in Ohio (950). The top school for donations was Kent High in Denver, Colorado ($868). Together we are making a difference.

SAVE THE RAINFOREST

We, the undersigned, strongly urge The International Monetary Fund to formally adopt an environmental policy that provides guidelines for protecting tropical forests.

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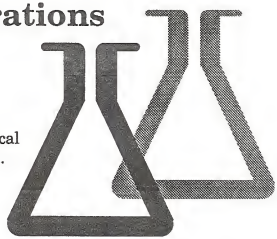
Contributions will be used to support rainforest conservation projects in Equador, Costa Rica, Malaysia, Central Africa and Paraguay. Checks may be made payable to "Save The Rainforest", a non-profit teacher/student corporation.

Science Department, Dodgeville High School, 912 West Chapel, Dodgeville, WI 53533

ACS Division of Chemical Education Minimum Safety Guidelines for Chemical Demonstrations



Chemical demonstrators must

1. Know the properties of the chemicals and the chemical reactions involved in all demonstrations presented.
2. Comply with all local rules and regulations.
3. Wear appropriate eye protection for all chemical demonstrations.
4. Warn the members of the audience to cover their ears whenever a loud noise is anticipated.
5. Plan the demonstration so that harmful quantities of noxious gases (e.g. N02, S02, H2S) do not enter the local air supply.
6. Provide safety shield protection wherever there is the slightest possibility that a container, its fragments, or its contents could be propelled with sufficient force to cause personal injury.
7. Arrange to have a fire extinguisher at hand whenever the slightest possibility for fire exists.
8. Not taste or encourage spectators to taste any non-food substance.
9. Not use demonstrations in which parts of the human body are placed in danger (such as placing dry ice in the mouth or dipping hands into liquid nitrogen).
10. Not use open containers of volatile, toxic substances (e.g., benzene, CCl4, CS2, formaldehyde) without adequate ventilation as provided by fume hoods.
11. Provide written procedures and hazard and disposal information for each demonstration whenever the audience is encouraged to repeat the demonstration.
12. Arrange for appropriate waste containers for and subsequent disposal of materials harmful to the environment.

BEST

On Saturday, October 21, members from the Montana B.E.S.T. (Better Elementary Science Teaching) project met at the Sheraton Inn in Great Falls to discuss how they could assist elementary schools across the state with their science instruction.

The group decided to gather various science activities. Once the activities have been gathered, B.E.S.T. personnel will utilize a computerized data base to help teachers and curriculum committees find those activities that will enhance teaching their science curriculum.

The material is being collected at this point and grant monies are being sought to enable the B.E.S.T. alumni to organize the data Base.

Schools across the state will be notified when the system becomes operational.

Bill Lee
B .E . S .T . Advocate
Winifred, Montana 59489
462-5420

How to Recognize and Control Common Greenhouse Pests*

Introduction: The purpose of this module is to assist you in developing the skills needed to identify and effectively control a variety of common greenhouse pests.

Materials:

hand lens or magnifying glass
atomizer or sprayer
hand sprayer for pesticide malathion
systemic insecticide *difocol*
fungicidal powder (*thiram*)
2-gallon buckets

bar of pure soap (*Ivory*)	ethanol
slug bait	Q-Tips
small sponge	toothbrush

Plants infested with the following common greenhouse pests: aphid, brown scale, mealybug, white fly, mites, slugs, nematodes, powdery mildew, and damping off.

Procedure:

1. White fly adults are small winged insect like a moth. It lays it's eggs on the underside of leaves. When the eggs hatch, small green larvae (nymphs) can be seen on the underside of the leaves. The larvae suck the plant's juices and secrete a sticky liquid called honeydew, which tends to attract other insects and may also encourage a black fungus called sooty mold.

2. To stop white fly infestations, the plant is washed is slightly soapy water. Begin by filling a 2-gallon bucket with water at room temperature.

3. Using a bar of pure soap, wet your hands in the bucket and make a lather. Pure soap is a mixture of sodium salts and fatty acids contains no additives that can

injure the plant. Synthetic detergents, on the other hand, often contains additives and should be avoided.

4. Set aside the soap and rinse your hands in the bucket. The lather from your hands will be sufficient to make the water slightly soapy for the plant wash. Fill a second bucket with freshwater at room temperature and set it beside the first bucket.

5. Invert the infested plant by placing your hands across the soil surface. Immerse the foliage in the soapy water. Gently raise and lower the plant in the water several times. Be careful not to damage the foliage.

6. Bring the plant up out of the soapy water and let it drain. Then, thoroughly rinse the foliage by immersing it in the second bucket. Continue to rinse until there is no soap remaining on the foliage.

7. Inspect the lower leaves for the presence of white fly larvae.

8. If there are larvae present, they can be dislodged with a cotton swab and remove by rinsing.

9. Set the plant upright and allow it to dry in a well ventilated area away from any other plants. After it is dry, spray the plant with insecticide at a distance of 15 cm. Be sure you spray the undersides of the leaves. You can use rotenone or malathion spray. However, the synthetic pyrethroids are now registered for white fly control and is more effective.

10. If the insecticide is in powder form, dissolve it in water according to the directions on the package. Place the solution in a sprayer and spray from a distance of about 50 cm. ***Caution: Don't use the same sprayer for insecticide as used for foliar misting!***

11. In handling pesticides and insecticides, exercise caution. Remember, they are generally poisonous to animals as well as plant pests. Always use prepare and use them in well ventilated areas. It is not advisable to store insecticides, because their chemical composition may change and burn plants. Unlabeled or incorrectly labeled insecticides result in many accidents. Mix only what you need!

12. Twenty four hours after the first application of insecticide repeat the soap washing and rinsing procedure to dislodge the white fly larvae killed by the insecticide.

13. Every 3-4 days thereafter check the plant for signs of re-infestation. If it is detected, repeat the soap bath and spraying procedure. Never spray more than once per week and make sure the plant is dry before applying insecticide. Generally, the best time to wash and spray is in the morning.

14. Most, but not all, aphids are wingless insects, green, brown or pale yellow in color, oval or teardrop in shape, and slightly larger than the adult white fly. Like the white fly larvae, aphids secrete honeydew. In addition, small wasps or ants are found with aphids. A plant infested with aphids is easy to recognize, since the insects are readily visible on the underside of the leaves cr along the stem. They also suck out the plant's juices.

15. First, wash the plant in soapy water as described above. Rinse thoroughly, then pick off any remaining insects with a cotton swab moistened with soapy water. Allow the plant to dry, and finally, spray with insecticide.

16. Mealy bugs appear as white wooly patches at the junction of stem and petiole or at the crown. Mealy bugs are persistant pest and is often difficult to eradicate permanently.

17. First, dip a cotton swab in ethanol and touch the bugs with it. Alcohol kills the insects and they drop off the plant. It is important to kill all the insects before pro-

ceeding.

18. Next, wash the plant in soapy water and rinse thoroughly. After the plant dries, spray with insecticide. It is also advisable to spray the soil arouund the plant to control mealy bug infestation. This will kill any eggs that may be present. After 24 hours, repeat the washing process as described earlier.

19. Brown scale are yellow or brown oval lumps on the stems or leaves and secrete honeydew.

20. Use a soft toothbrush dipped in soapy water to remove as many insects as possible.

21. Then, wash the entire plant in soapy water followed by clean water at room temperature. After the plant is dry, spray it with malathion.

22. Spider mite infestation causes the plant to appear wilted, with slightly curled leaves. Yellow specks and thin white threads can be seen on the underside of the leaf. The loss of buds may also be observed.

23. Immerse the plant in soapy water and rinse twice. After drying, the plant is sprayed with difocol.

24. Cyclamen mite infestation is more difficult to diagnose. The plant may have a wilted appearance and curled leaf. The undersides of the leaves do not show the characteristic spots associated with spider mites, as there are no white threads. These mites generally work in the crown of the plant. They need moisture and feed on new leaves, so the crown is wilted and does not grow as fast as the lower leaves.

25. Spray with difocol insecticide during the early stages. Heavily infested plants do not respond to this treatment and the plant should be discarded.

26. It is important to identify mite infested plant immediately. Mites will spread quickly to other plants. When working with mite-infested plants be sure to wash your hands and instruments before working with healthy plants. When treating infected plants, isolate them from healthy plants.

27. Systemic insecticides are highly effective for use on plants which are not for human or animal consumption in any form, because they are very toxic. Small amounts are mixed into the soil around the plant and are absorbed by the root system and transported to all parts of the plant via the sap. They are generally used when long term protection from a variety of pests is desired and must be handled carefully because of their high toxicity. Be sure to follow the instructions on the package carefully.

28. Slugs are common greenhouse pests. They are gray, brown, or black shelless snails found in dark, moist areas of the greenhouse. They feed at night or during overcast days, leaving irregular depressions or holes in the foliage which will turn brown due to death of the tissue. To control slugs, commercial slug bait containing mateldehyde are available. Or, as an alternative, place a small dish containing beer among the plants the late afternoon. The slugs are attracted to the beer and are easily spotted the following morning.

29. Nematodes are extremely small, wormlike organisms which live in the soil, especially in frost free climates and attack plant roots, causing swellings or galls to form on the roots. The foliage of a plant suffering from a nematode infestation may be stunted or yellowish. To prevent nematodes from infesting the greenhouse, use only sterilized soil and inspect the root systems of all new plants. It is best to destroy any plant that is suffering from nematodes. In case of a mild infestation, however, a nematicidal agent, such as

VC13 or a systemic insecticide may be sprinkled on the soil around the plant.

30. Powdery mildew is a common disease attacking the foliage and stems of plants. The disease begins as small white patches of fungus. The patches grow in size until they obtain a white, powdery growth completely covering most of the older leaves, which may die. Powdery mildew is most severe in cool, moist weather. To control powdery mildew, apply *Dinacap* copper fungicide or sulfa-dust.

31. Damping-off is a common fungal disease causing seeds to rot and seedlings to collapse and die. Once the disease appears in a seed flat, it can travel rapidly through the flat and kill all the plants.

32. To prevent damping-off, treat the seeds with a fungicide such as thyron. Transfer the seeds to a beaker and add a small amount of fungicide. Shake the seeds well to coat them before planting. In addition, use only sterile soil and containers for planting.

33. When plant infestation has been identified, it is wise to disinfect the area where the infected plant have been growing. After treating the plants, place them in isolation disinfect the area with alcohol or a commercial disinfectant like Lysol. Wait at least 24 hours before returning the plant to the treated area.

34. When plants are infested with two or more pests, treatment becomes more difficult. Heavily infested plants often have to be destroyed.

*Adapted from the *American Institute of Biological Sciences*, Project Bioteck

This is the 5th in a series of articles to help you grow plants for school or home use with better results.

Richard A Menger, MST

Attention Teachers of High School Physics Students

XXI International Physics Olympiad

The Netherlands–July 5,1990

U.S. Team Selection and Training

The Physics Olympiad is a five-day, international competition among pre-university students from all over the world. It began in 1967 with mostly eastern European participants, but has since expanded worldwide. The United States enters the top 5 members of its 20-member team in the Olympiad. During the competition, the contestants solve challenging physics problems–both at desks, with paper and pencil and in the laboratory, where they must use simple equipment with ingenuity.

Sponsors of the 1989 U.S. Physics Team include the following, giving $5000 or more: American Association of Physics Teachers, American Institute of Physics, American Physical Society, AT&T Foundation, Eastman Kodak Company, Ford Motor Company, Hewlett-Packard, IBM, Office of Naval Research, and Xerox. Sponsors and contributors giving less than $5000 were: Addison-Wesley Publishing Company, Allyn & Bacon Corporation, American Astronomical Society, American Association of Physicists in Medicine, American Crystallographic Association, Acoustical Society of America, American Association for the Advancement of Science, International Society of Optical Engineering, Belcore-Bell Communications, BP Research International, COMSAT Satellite Corporation, GTE Laboratories, William Lehrfeld, W.W. Norton, Phillips Petroleum, Schlumberger-Doll Research, University of Maryland, Westinghouse Corporation, John Wiley & Sons, and Worth Publishers, Inc.

If you have an extremely talented physics student in your class, contact. Jack M. Wilson,
US Physics Olympiad Team
Department of Physics
University of Maryland
College Park, MD 20742
•301•345•4200

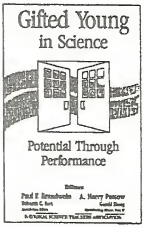
Applications due by:
January 16. 1990

Refer to the Experts – Books from the National Science Teachers Association

Gifted Young in Science: Potential Through Performance

Edited by
Paul F. Brandwein,
A. Harry Passow,
Deborah C. Fort,
and Gerald Skoog

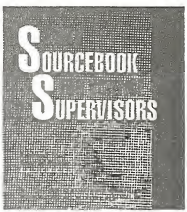
Is there a promising child in your class or in your family who might love science? *Gifted Young in Science*, the first book in over 30 years devoted to talented students who are interested in science, will help you encourage them. Thirty-four scientists, teachers, and scholars show you how to create environments that encourage any child to uncover special talents in the wide field of science. *Gifted Young in Science* describes methods—based on sound findings in philosophy and psychology—for administering programs for gifted students, designing their curriculum, and helping them excel. 1989, 422 pp. $24.00/hardback, $17.00/cloth



Sourcebook for Science Supervisors

Third Edition
Edited by
Gerry Madrazo
and LaMoine Motz

Science supervisors, department chairs, and curriculum specialists will find the *Sourcebook for Science Supervisors* an invaluable resource. Jointly developed by NSTA and the National Science Supervisors Association, the *Sourcebook* covers program development, proven methods for implementing change, management and evaluation techniques, how and when to write grant proposals, ways of garnering community support for science programs, science safety considerations, laboratory requirements, and more. 1988, 206 pages, Softcover, $16.00



All orders of $25 or less must be prepaid. Orders over $25 must include a purchase order. All orders must include a postage and handling fee of $2. No credits or refunds for returns. Send order to:

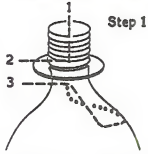
NSTA Special Publications 1742 Connecticut Ave., NW Washington, DC 20009

Wildlife Feeder Designs

Part 1. Diagram and instructions for the pop bottle sunflower seed feeder.

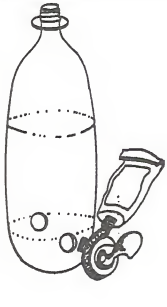
Materials Needed: Three 2-liter plastic soft-drink bottles, a 7-inch dessert topping lid, a baby food jar lid, a coping saw, a single-edged razor blade or "X-acto" knife, all-weather rubber sealant, 8 inches of wire or monofilament fishing line, a small nail or 7/16-inch bit and hand drill, and a metal or wood screw.

Soak a 2-liter bottle in warm, soapy water to clean inside and remove label. Pull off the colored plastic base, but save it for use as a measuring device when cutting the feeding holes.



Step 1: Using a second 2-liter bottle, make a perpendicular cut with the coping saw at the bottle's mouth down to the point at which the neck collar begins. Make a second cut at, and slightly above the collar perpendicular to the first cut. Discard the cut piece. Cut the remaining section of the neck and collar away from the bottle, leaving at least a 1-inch flange of plastic beneath the collar. Using a third 2-liter bottle, repeat these same steps. The two spouts that result will be used as feeding holes, with their neck pieces preventing seed spill-out.

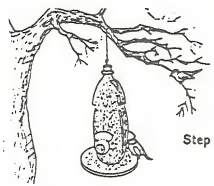
Step 2: Cut two 1-inch diameter circular holes across from each other in the sides of the first bottle. The top of the plastic base that was removed earlier will serve as a guide — the top of each cut should be made at the same point as the top of the plastic base.



Step 3: Apply sealant around the outside of each feeding hole. Insert spouts into the bottle, flange end outward. The collar on each spout and the sealant will form a water-tight "gasket." Secure with a rubberband until dry.

Step 4: Using a drill or small nail, make small holes in the bottom of the bottle and the dessert topping and baby food lids. Attach the two lids, with the baby food lid on the bottom, to the bottom of the bottle with the metal or wood screw. The topping lid will form the perch that the baby food lid will stabilize.

Feeder Design Continued...



Step 5: Drill or punch two small, parallel holes in the bottle top. String wire or monofilament line through the holes and tie. Once the bottle is filled with sunflower seeds, screw the top onto the bottle.

CHRISTA McAULIFFE FELLOWSHIP FOR TEACHERS 1990

The U.S. Department of Education has announced that a Montana teacher will be selected to receive a Christa McAuliffe Fellowship Award of up to $31,200 for the coming year.

The award may be used for sabbatical study or research, consultation or assistance to public and private schools or school systems other than those with which the fellow is employed, development of innovative programs, or model teacher programs and staff development. To be eligible, an applicant must be a U.S. citizen and a full-time teacher in a public or private elementary or secondary school.

Applications are available from the Office of Public Instruction (OPI). The deadline for completed applications is past for this year, but if you know of an outstanding teacher who might like to apply for this fellowship, ask him or her to request an application packet from Marlene Wallis at OPI (444-3693).

The decision on the fellowship nomination for this year will be made by December 15, 1989. Awards are scheduled to be made on March 30, 1990.

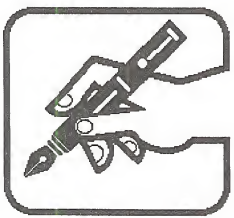
for Superior Achievement in Science Education 1989

The Montana Science Teachers Association honored six teachers at its annual *Bob Makela Luncheon* which was held in Great Falls, October 19. The teachers honored were:

Kristy Kay Bick, Huntley Project School, Worden, Montana
Judi Harris, Ulm Public School, Ulm, Montana
Judy Henry, Sandstone Elementary School, Billings, Montana
Brenda Hansen, Longfellow School, Baker, Montana
Thomas R. Stahley, Riverside, Jr. High, Billings, Montana
Robert H. Feldman, Will James Jr. High, Billings, Montana

Call For Papers!!

The *Montana Academy of Sciences* is now accepting titles for papers to be presented at the 1990 annual meeting in Missoula, April 21-22 on the campus of the University of Montana. Please send your title to Linda Robinson Math/Science Sectional Vice President, before February 3, 1990. Questions may be directed via the *Montana Education Bulletinboard* or in writing to Linda Robinson 4408 Pine Cove Road, Billings, MT 59106. Presentations are twenty minutes long and abstracts or entire articles can be included in the annual publication of the proceedings. This is an excellent opportunity for the Montana teacher to present their creative ideas to colleagues and have them printed in an annual publication. Plan now to send in your title and mark your calendar for April 21-22 in Missoula.



Dear Colleagues:

The *National Association of Biology Teachers*, in conjunction with the textbook publisher, Prentice Hall, annually sponsors a program intended to identify and honor an outstanding biology teacher from each state, Canada, and Puerto Rico. Each year, the recipient of this prestigious award is presented a framed certificate and a pair of *World Class* binoculars. An awards luncheon will also be held to honor the 1990 recipients at the National Association of Biology Teachers' annual convention in Houston, Texas, next November.

If you know of a biology teacher or a life science teacher (grades 7-12) who, in your opinion, is doing an outstanding job, won't you take the time to nominate that teacher? Self-nominations are also welcome. The teacher need not be a member of NABT or any other organization to be selected. The overriding criteria are that they teach primarily life sciences and have demonstrated outstanding effectiveness, ability, inventiveness, leadership, and inherent strength in teaching the life sciences.

I look forward to receiving many nominations this year. Without a doubt we have many excellent biology teachers in Montana who are not being recognized for their outstanding contribution to the education of their students. Please help to identify and reward them for the work they do for all of us!

Please send either your name and address or the name and address of your nominee to the following address.

Sincerely,

Craig Kuchel, Director
Montana OBTA Program
Florence-Carlton School
5540 Old Highway 93
Florence, MT 59833

Students Study Fire Ecology

Junior High students of *Monforton School* in Bozeman compiled a class report following their annual three-day field trip to YellowstoneNational Park. This year's trip was held October 25, 26, and 27. During the three days the students attended sessions in wildlife/plants; water quality/ aquaticinsects; astronomy; geothermal features; soil erosion; and fire ecology.

Students were accompanied by parents, Mike Pierre (7th grade teacher), and John Graves. They camped in tents and John and Mike do all the instruction. This or a similar program has been in existence for the last eight years that John Graves has been at *Monforton*.

The following was data collected by the students on the fire-ravished area and is just one section of the total report:

Total % of plants per .1 meter^2

Grasses/sedges	12
Forbs	12
Mosses/lichens	10
Trees	2
Bare ground	60

Interpretation of the above may seem that there was very little growing, but we really found a lot of growing plants! To find unburned soil, one only had to dig 1-2 inches down. Students also noticed a lot of 1-inch trees that had started to grow later.

Good job students! Looks like a succession of growth has already begun. Next year may bring even more surprises.

Science Screen Report Videos

Science Screen Report Videos are for junior and senior high school classes. They are designed to increase and expand your students understanding of current affairs in science, while reinforcing curriculum material in biology, ecology, medicine, and space science.

These SSR videos are produced by Allegro Film Productions, in cooperation with the National Science Teachers Association and the Accreditation Board for Engineering and Technology. Pfiser Inc. is sponsoring the viewing of these films for schools in Montana.

Request these videos from John Rogan by writing to him at Western Montana College or by leaving a message on the Bulletin Board. Each video may be borrowed for up to two weeks free of charge.

The following titles are available:

1. Genetic Engineering, Understanding the Nature of Change; MedicTechnology; Engineering, To Capture the Sun.
2. Colors, Chemistry and Computers; Acid Rain, In Search of Solutions; High Tech Aircraft Revolutionize Flight; The Universe Probed By Radio Astronomy.
3. Minority Inventors of Science and Engineering; Frogs, The Amazing Adaptable Creature.
4. A Journey Through Our Solar System;Project Monex Studies the Monsoon; Electromagnetism at Work; New Scientific Breakthroughs from Computer Graphics Technology; To Capture the Sun.
5. The Greenhouse Effect; Encounter with Uranus; Bacteria Serving Humanity; Fifth Generation Computers.
6. Light-weight Construction; Leaf Cutting Ants; The Moving Continents.
7. Biology of Water; Insects and Biology; Insects and Chemistry; Saving America's Wildlife.
8. Energy from the Sun; The Science of Robotics; Nuclear Waste Management

SCIENCE TEACHING INSTITUTE IN THE ROCKIES
funded by NSF!

The Science/Math Resource Center at Montana State University has *just* received a grant to design, develop, and evaluate an innovative summer institute for secondary science teachers that integrates science content and science education issues into graduate-level science modules. The modules will be developed by teams involving university scientists, inservice teachers, and science educators. The modules will be taught at MSU by the scientists and carry the appropriate science-department rubric. At this time there are many, many things to be determined such as which topics are needed by teachers, when to hold the Institute, whether or not these offerings can be applied to a masters degree program, how many credits each module will represent, and so on. We will keep you posted at the Institute develops.

Over the next three years the Science/Math Resource Center will create sixteen modules in biology, chemistry, earth sciences, and physics developed by these special cooperative developmental teams. The modules will be four-week, half-day courses, so each Institute participant would take two modules per summer. It is important that we learn which topics interest you.

For the three years of the grant there will be stipends and living expenses provided for 50 secondary science teachers and is not limited to Montana teachers. If you are interested in our keeping you informed as the project develops, fill out the form below.

---------- SCIENCE TEACHING INSTITUTE IN THE ROCKIES----------

YOUR NAME> _____ _____
SCHOOL> _____
ADDRESS> _____
CITY, STATE, ZIP _____ PHONE_____

Rank your perference for a time to hold the Institute. Use #1 as your first choice and cross out options that are unacceptable.

____ Mid June to Mid July ____ July (after the 4th) ____ Mid-July to Mid August

Rank your preferences for modules by discipline and, separately, by topics

by discipline: _____ astronomy _____ biology _____ chemistry
_____ computer science _____ geology _____ physics

by topics: (Note: These are only examples for surveying purposes)

_____evolution in the classroom
_____chemistry of photography
_____ecology
_____holography
_____molecular biology advances
_____teaching of mechanics
_____alpine ecology
_____geologic mapping
_____modern physics
_____macrogeology
_____interfacing computers to expts
_____teaching AIDS issues

Please add other suggestions. This is just beginning and your input is important.

Be Warned Biology Teachers, Their at It Again!

Haughton Publishing Company of Dallas, Texas has recently released a supplemental textbook entitled *Of Pandas and People.*

The brochure states: *Now there's a supplemental textbook that presents an alternative, scientific viewpoint of biological origins...and makes it easy to teach.* Somehow I knew that the creationists would try their deceptions again.

The brochure continues: *For years, high school biology teachers have felt the need for reliable information on plausible scientific alternatives to conventional evolutionary theories to balance their curriculum.* I must be living in a cave. After 17 years of teaching biology, I'm still teaching Darwinian Evolution with more vigor each year.

The text is a perfect example of a well-known fallacy called *special pleading* and use of apparent design, using evidence which is common to both evolution and creation.

To answer the cover heading: *Are evolutionary theories leaving a big gap in your biology curriculum?* I'll simply say NO!

Richard A Menger, MST

SCIENCE SAFETY WORKSHOPS

Watch for more Science Safety Workshops to be offered during March, April and May. The new workshops will be a combination of the the Phase I and II workshops from SMRC. They are tentatively scheduled for Billings, Bozeman, Dillon, Havre, and Missoula. Credit will again be offered for the course by MSU.

For More Information Contact:
Russ Hartford
Flathead High School
644 4th Street West
Kalispell, Montana 59901
•406•756•4502

Safety First

William F. and Edith R. Meggers

Project Award

Call for Proposals

The William F. and Edith R. Meggers Project Award of the American Institute of Physics is a biennial award designed to support projects for the improvement of high school physics teaching in the United States, or other projects for the advancement and diffusion of physics and its application to human welfare. The Meggers Project Award Committee invites proposals for the 1990 Award.

Criteria

a. Objectives

The 1990 objectives are to support projects at the pre-college level for increasing interest in physics and enhance the quality of physics education.

b. Guidelines

1) Projects proposed must be clearly directed toward accomplishing the 1990 objective.

2) Proposals are invited from individuals as well as groups.

3) Projects that can serve as models for others will be given preference by the Committee.

4) Projects that propose the use of the entire budget for the purchase or rental of equipment will be disallowed.

5) A completed proposal will consist of: Title, Abstract, List of Personnel, Objectives, Description of Activities (five or fewer pages), and Budget.

6) For successful proposals, a required report on project activities is due 31 August 1991.

Nature of the Award

The Award consists of monetary support. A total of $25,000 is available to be awarded for one or more outstanding projects in the 1990 competition.

The Meggers Project Award is made possible by an endowment created by the gift of a stamp and coin collection from William F. and Edith R. Meggers to the American Institute of Physics. The first award was made in 1988.

Procedures

The 1990 Meggers Project Award will be approved by the AIP Executive Committee in time for an announcement by 30 April 1990. Selection will be recommended by the Meggers Project Award Committee, appointed by the AIP Director of Physics Programs.

Send proposals to:
Jorge Barojas
Senior Education Fellow
American Institute of Physics
2000 Florida Ave., N.W.
Washington, DC 20009
(202)232-6688

Deadline for receipt of proposals is 21 March 1990.

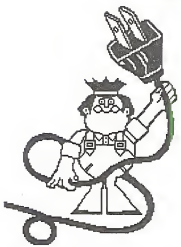
MSTA

NORTHWEST SCIENCE IDEA EXCHANGE

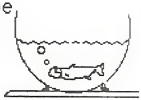
FEB 12, 1990

9 A.M. 3 P.M.

THE NEW EDGERTON GRADE SCHOOL



The Montana Science Teachers Association is sponsoring a Science Idea Exchange Workshop for all teachers of grades K-6 in M.S.T.A. region 1. The workshop will be held in Kalispell at the new Edgerton Grade School, which is located on Whitefish Stage road. The Workshop will be on Mon, Feb. 12, 1990 from 9 A.M. to 3 P.M..



Coffee and goodies at 9:00

Please come and share with us what works for you and your students.

MSTA will have some interesting materials, projects, activities and experiences to share with YOU.

We look forward to seeing you there!!!

If you have questions or comments, write or call

Russ Hartford 756-4502
Flathead High School
644-4th St.W.
Kalispell,Mt. 59901

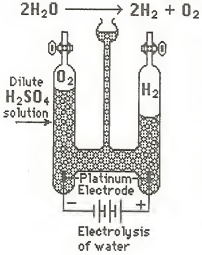
would your school be interested in hosting next year

MSTA

NORTHWEST SCIENCE IDEA EXCHANGE

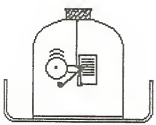
10 A.M. **JAN 19, 1990** **3 P.M.**

LIBBY HIGH SCHOOL



The M.S.T.A. is sponsoring a Science Teacher's Idea Exchange Workshop for all Jr High and High School Science teachers from M.S.T.A. Region 1. The workshop will be held at **LIBBY HIGH SCHOOL ON FRIDAY, JAN 19, 1990**. The hours are from 10:00 A.M. to 3:00 P.M.. There will be a no-host luncheon where we can continue the Idea Exchange.

You will be asked to bring and present or display one item of general interest. The general interest item may be a lab, a demonstration that works well for you, a grading system, a computer program that you like, or anything that helps you or your students in the classroom.



We look forward to seeing you there.

If you have questions or comments, write or call

Russ Hartford **756-4502**
Flathead High School
644-4th St.W.
Kalispell,Mt. 59901

Montana Earth Science Teachers:

Nationally there is a rapidly growing interest in a new grass roots organization called NESTA (National Earth Science Teachers Association). Maybe you have heard of it. Their primary interest is to promote Earth Science education and to enhance public awareness of the value of Earth Science education. It is affiliated with AGI, NSTA, and GSA. Membership is comprised of mostly precollege classroom Earth Science teachers like yourself. NESTA publishes a 20+ page newsletter four times a year, and it is packed with national news and many helpful hints, ideas and resources that would be useful to any Earth Science teacher.

Part of the intent of NESTA is to have state organizations that voice local concerns to the parent organization. State organizations are free to promote Earth Science and assist Earth Science teachers around their state as they see fit.

Currently there are six NESTA members in Montana and we are looking for ways the organization could grow and be of service to you. We are open to your suggestions of possible activities or services that we could provide to the State's teachers. Some possible ideas include:

A. providing Montana rock/mineral sets (if you have good specimens locally available let us know about it)
B. providing slide sets of geological features
C. sharing ideas about classroom Earth Science activities that work
D. a network of state contacts for information etc.
E. local field trip information
F. friendship with a common interest
G. other --- send ideas to Bruce Baty, President MESTA, 3004 Queen Street, Missoula, Mt. 59801

One of the purposes of this letter is to encourage you to join this fledgling organization and help it grow and improve Earth Science education around the Nation and in Montana.

Membership in MESTA (Montana Earth SCience Teachers Association) is restricted to members of MSTA and NESTA*. The dues for all 3 organizations is $ 10.00 for MSTA, $ 10.00 for NESTA, and $ 2.00 for MESTA*, for a total of $ 22.00. Since you are already a member of MSTA, the dues is almost cut in half. Please fill out the following membership form and send your check for $ 12.00 (or $22.00) to: NESTA / MESTA Membership, % Gil Alexander, Membership Chairman, NESTA, 504 Dearborn, Helena, MT 59601. If you wish to join just NESTA, send $ 10.00 to the above address.

Sincerely,

Bruce Baty

Bruce Baty
President, MESTA

NESTA/MESTA Membership Form*

☐ NESTA Membership ☐ MESTA Membership

Please Print

Name _____

Street _____

City _____ State _____ Zip _____

Office Phone _____ Home Phone _____

Position _____ Grades Taught _____

Subjects Taught _____

Computers available to you _____

*NESTA and MESTA membership is by calender year.

Mail to:
Gil Alexander
Membership Chairman
NESTA
504 Dearborn
Helena, Montana 59601

With Special Thanks

This comes to let you know
just how much I appreciate
your kindness
and your special thoughtfulness.

Hello Friends,

Thank you so much for the beautiful plaque awarded to me. I was touched! When I was in school Science was never my favorite subject. I've loved teaching it and especially enjoy the people working in the field. We're a "unique" breed! The award will always be one of my special "teaching" momentoes.

Brenda Hanan

The MSTA Board of Directors wishes
every teacher a very happy holiday season.

postage

Editor-in-Chief Richard A Menger, MST
Biology Department, Baker High School
Box 659, Baker, Montana 59313-0659

Montana Science Teachers Association

MSTA will help the individual participate in determining the destiny of science in Montana. The organization serves as a vehicle for educators from all professions to exert positive influences on young people. Many important decisions concerning the scope and direction of science education will be strongly influenced by our organization.

MSTA goals are to increase public awareness, interest and support of science education in Montana.

Membership Category:	
1 year	$ 10.00
2 years	$ 17.00
3 years	$ 24.00
Life	$100.00
Student /Retired	$ 3.00

Membership dues are $10.00 and are payable to Doug Shenkle, Treasurer,1300 Billings Ave , Helena, Montana 59601. Membership includes a one-year subscription (4 issues) to *The Montana Science Teachers Association Newsletter.*